Table of Contents

USB/Audio Interface

USB/Audio Interface

Model: E9x, E70, and E6x (except 7 Series)

Production: From 3/2007, 4/2007 (E70)

OBJECTIVES

After completion of this module you will be able to:

- Explain the operation of the USB Interface

- Identify the components used in the USB/Audio Interface

Introduction

Option SA 6FL, "USB/Audio interface", enables the sound systems in BMW vehicles to play audio files stored on mass storage devices with a USB (Universal Serial Bus) interface, e.g. USB memory sticks. A special iPod adapter cable is available for connecting an Apple iPod.

USB is a serial bus system used for quick and easy connection of terminal devices to computers.

The mass storage device can be accessed from the "Entertainment" menu on the iDrive.

The CID supports alphanumeric characters of the Roman character set. Other character sets cannot be correctly represented on the CID at present.

Operation is described in the owner's handbook for the vehicle.

USB/Audio Interface On iDrive

Index	Explanation
1	Selection of external audio source
2	Selection of mass storage device
3	Selection after sorting
4	Menu structure of mass storage device

USB mass storage devices that support the "USB Mass Storage Class" standard can be connected. That includes mass storage devices for playback of compressed audio files with a USB interface such as MP3 players, USB memory sticks, etc. The system also supports Apple iPods of the 4th generation or later, iPod nano and iPod mini if connected using the iPod adapter cable (special accessory).

Due to the large number of devices on the market, no guarantee can be given that every available "USB Mass Storage Class" device will function through the USB interface. If a device of a different device class is connected, the message "Incompatible device" appears.

When a USB mass storage device is connected, the contents of the device are read and the folder structure processed for display on the CID. In addition, a plausibility check is performed as to whether the tracks can be played by the vehicle's sound system. Only those tracks that can be played are displayed.

Processing of the data takes some time. While the database of the content details of the music tracks is constructed, the music files can only be selected by navigating through the folder structure. On completion of the database, music tracks can also be selected by genre, artist and album.

Media Transfer Protocol (MTP) is not supported at present. MP3 players that carry the PlaysForSure logo use MTP and are therefore not supported. More information on the protocols used can be obtained from the operating instructions of the mass storage device concerned.

Note: Connecting mobile phones to the USB interface is not recommended. With certain mobile phones, Bluetooth is deactivated if they are connected to the vehicle through the USB interface. There is no USB socket on the Snap-in adapter.

USB hard drives must not be connected to the USB interface due to their high power draw. It is not permissible for hard disks to draw their power supply from the vehicle's electrical system (e.g. from the cigarette lighter socket) and can cause faults.

The following compressed file formats are normally supported with fixed and variable bit rates:

- MP3 (MPEG-1 Audio Layer 3) with ID3 tags Version 2

- Windows Media Audio (WMA) with WMA tags

- Advanced Audio Coding (AAC).

The WAV file format is also supported. USB mass storage devices must be formatted using the FAT file system. If more than one partition (logical drive) has been set up on the device, only the first partition is supported.

The USB mass storage device cannot be accessed if the files are password-protected or are subject to Digital Rights Management (DRM). DRM is a method of protecting copyright and marketing rights relating to intellectual property in digital form.
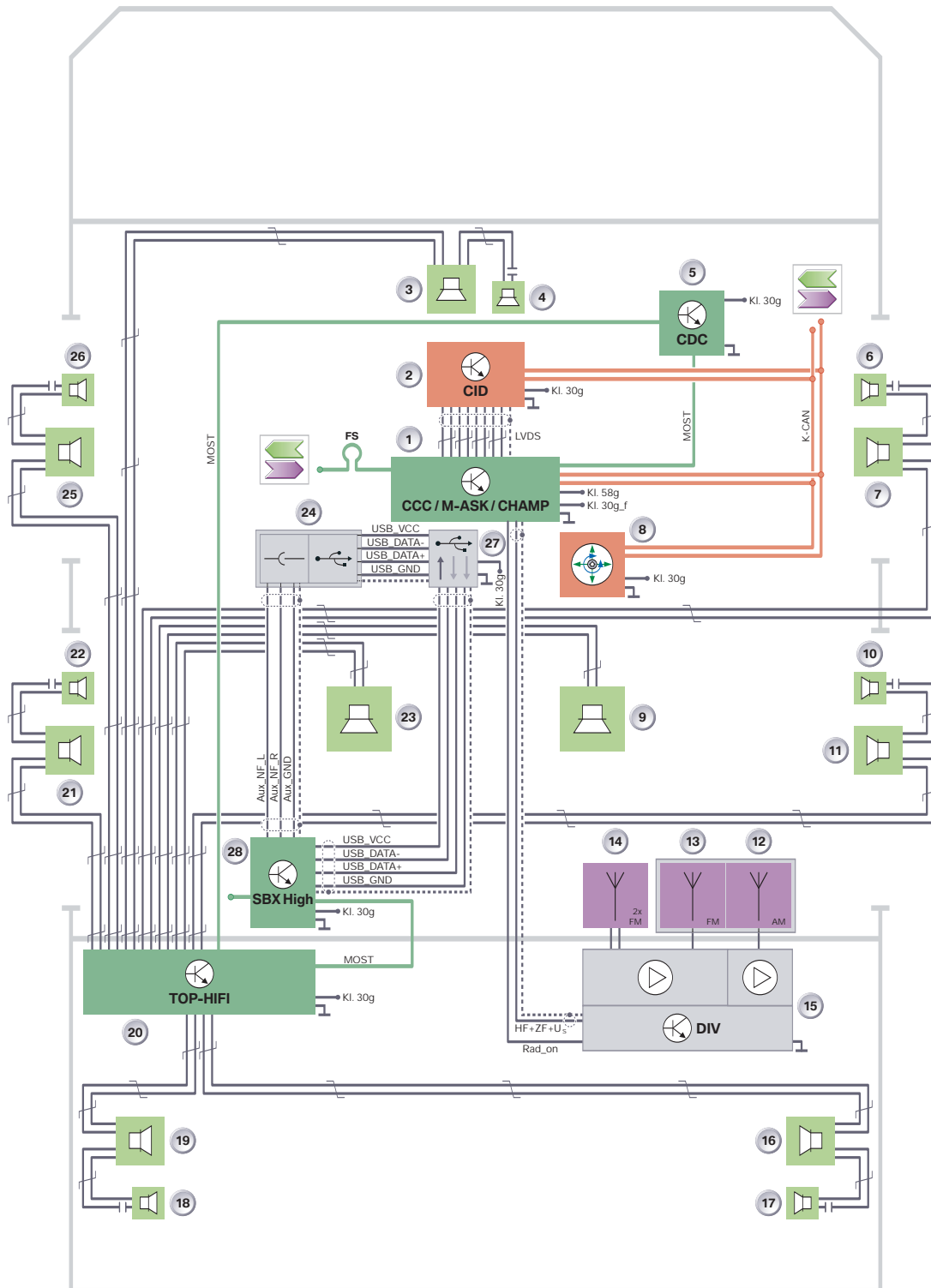
If music tracks acquired from Apple iTunes are to be played, the iPod must be connected by means of an adapter cable that simultaneously uses the jack socket and the USB. The adapter cable is available to order from BMW Parts Sales.

With the adapter cable, the USB connection is used to control the iPod and the jack socket for audio playback. The reason for this method of connection is that music tracks obtained from iTunes are subject to DRM and can only be played on the device to which they were downloaded. The copyright protection prevents digital transmission of the music track via USB.

If a video file is selected on the iPod, only the sound track is played. If other supported USB mass storage devices are used, video files are not displayed.

It is only possible to access the files on the mass storage device using the iDrive when the USB mass storage device is connected to the USB interface. If the mass storage device is connected using the jack plug, the iDrive cannot be used to operate the device.

CDC

Kl. 30g

CID

Kl. 30g

MOST

K-CAN

MOST

FS

LVDS

CCC / M-ASK / CHAMP

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USB_VCC

USB_DATA-

USB_DATA+

USB_GND

Kl. 30g

Kl. 30g

Aux_NF_L

Aux_NF_R

Aux_GND

USB_VCC

USB_DATA-

USB_DATA+

USB_GND

SBX High

Kl. 30g

MOST

TOP-HIFI

Kl. 30g

2x FM

FM

AM

DIV

HF+ZF+U$_S$

Rad_on

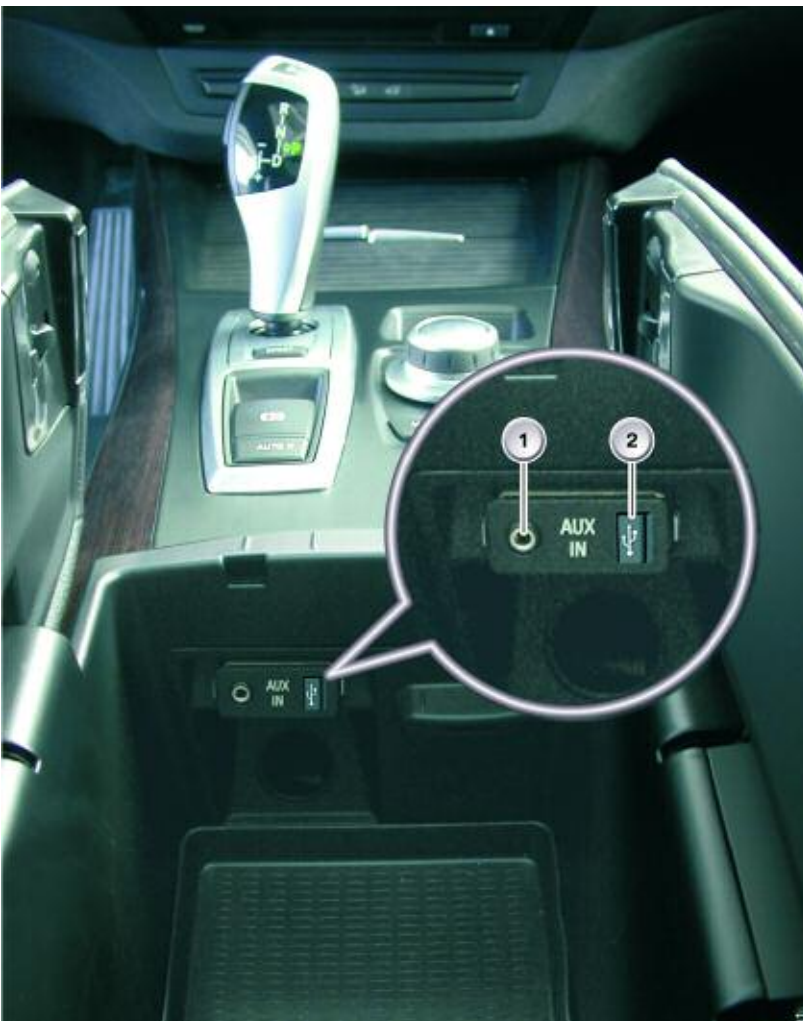| Index	Explanation	Index	Explanation
1	Head unit	15	Aerial amplifier with diversity module
2	Central information display	16	Mid-range speaker, D-pillar right
3	Mid-range speaker, front center	17	Tweeter, D-pillar right
4	Tweeter, front center	18	Tweeter, D-pillar left
5	CD changer	19	Mid-range speaker, D-pillar left
6	Tweeter, front right door	20	Top-HiFi amplifier
7	Mid-range speaker, front right door	21	Mid-range speaker, rear left door
8	Controller	22	Tweeter, rear left door
9	Central bass speaker, right	23	Central bass speaker, left
10	Tweeter, rear right door	24	Audio socket with USB interface
11	Mid-range speaker, rear right door	25	Mid-range speaker, front left door
12	Rear spoiler aerial (AM)	26	Tweeter, front left door
13	Rear spoiler aerial (FM1)	27	USB hub
14	Rear window aerials (FM2, FM3)	28	High interface box
LVDS	Low voltage differential signal	MOST	Media Oriented System Transport
Aux_NF	Audio input for additional audio sources	FS	MOST direct access
Rad_On	Control signal or power supply	US	Switching voltage
HF	High frequency signal	ZF	Intermediate frequency signal
USB_VCC	USB power supply	USB_DATA +	USB data positive
USB_GND	USB earth	USB_DATA -	USB data negative

Components

Option SA 6FL, "USB/Audio interface" consists of the following components:

- High interface box (SBX High)

- USB hub

- Audio socket with USB interface

- Application software on the head unit.

The USB interface is on the center console and is protected by a slider mechanism.

To prevent earth loops, simultaneous use of the USB interface and the 12 V socket for charging the mass storage device is not recommended. Dependent on the USB lead used, the mass storage device may be able to be charged through the USB interface. However, the power consumption of the mass storage device must not exceed the maximum level of 500 mA permitted by the SBX High.

Index	Explanation
1	Audio socket (3.5 mm jack)
2	USB interface

Location of Audio Socket with USB Interface

The High interface box (SBX High) performs the following tasks:

- USB connection for USB/audio interface

- Bluetooth signal connection for customer's mobile phone (dealt with in "E70 Telephone Systems" Product Information)

- Voice input system (dealt with in "Voice input and activation systems E70" Product Information)

The High interface box is always fitted if option SA 6FL, "USB/Audio interface", is fitted to the vehicle. It decodes the digital audio signals that are supplied via the USB interface. After decoding, the audio files are broadcast via the MOST. In addition, the analogue LF signals from the audio socket are also broadcast on the MOST.

Software (drivers) cannot be uploaded to the SBX High via the USB interface.

The SBX High supports USB 1.1 with the following specifications:

- Maximum data rate: 12 Mbit/s
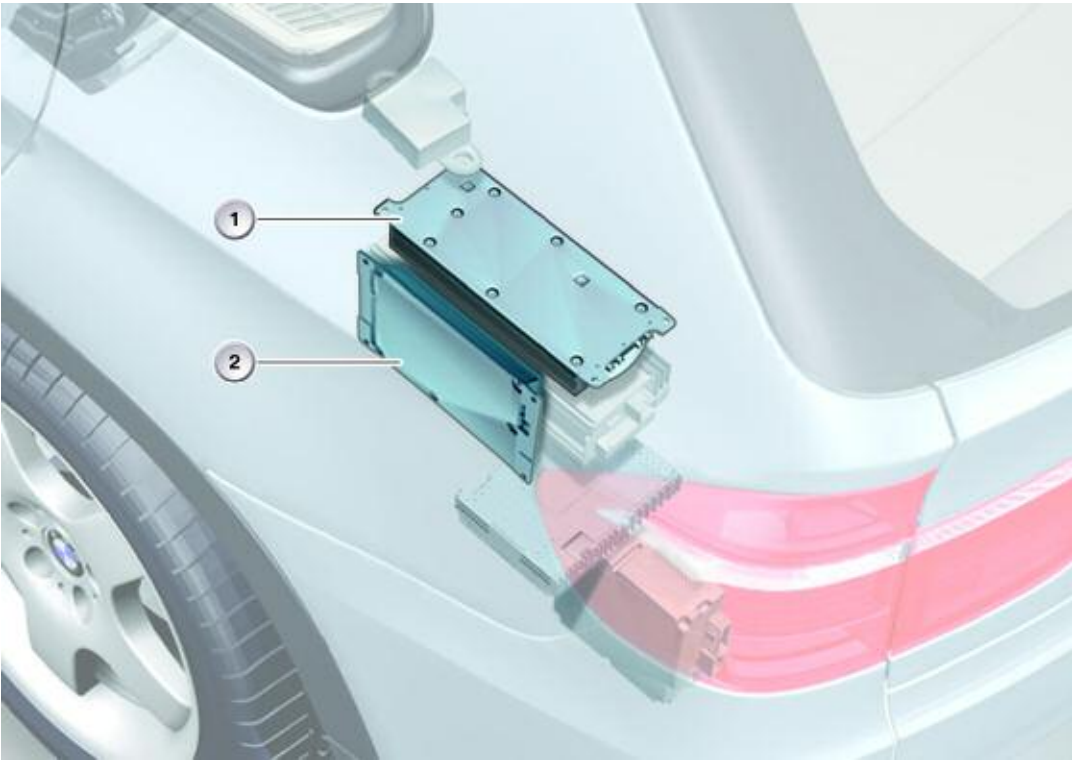
- Voltage: 5 V

- Current: 500 mA.

The SBX High is located in the luggage compartment on the left-hand side.
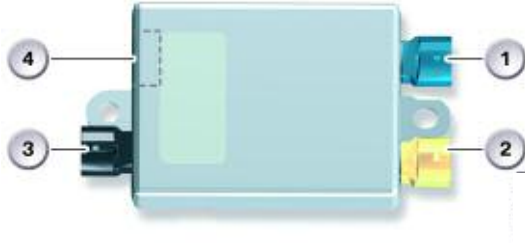
SBX High Connections

Index	Explanation
1	Bluetooth signal Connector color code: transparent
2	USB connection Connector color code: black

SBX High Location

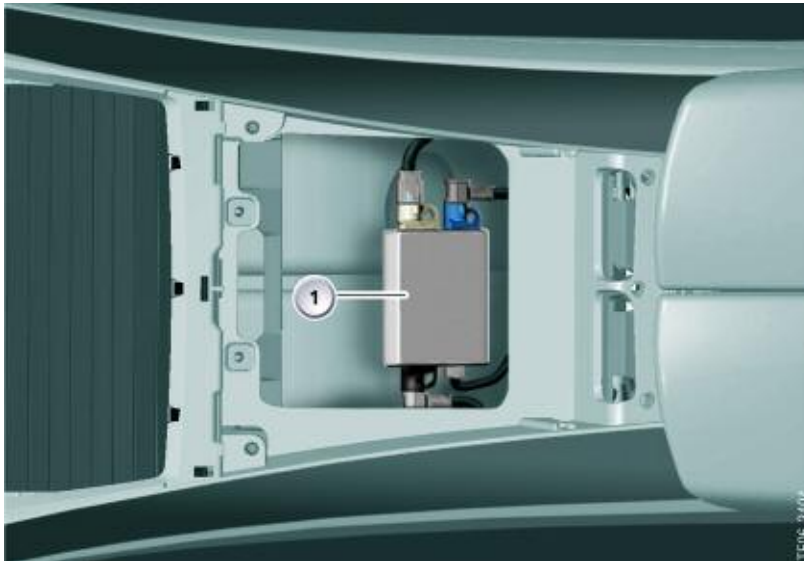| Index	Explanation
1	Telematic Control Unit (TCU)
2	High interface box (SBX High)

The USB hub allows multiple USB interfaces to be connected to the SBX High. The USB hub incorporates an active USB signal amplifier and is equipped with one USB input and two USB outputs. The second output is not used at present.

Index	Explanation
1	USB Interface - Blue
2	Not used at present - Transparent
3	SBX High - Black
4	Power Supply - Black

USB Hub

The USB hub is fitted underneath the center console. Its precise location depends on which version of the climate control system is fitted.

Index	Explanation
1	USB Hub

Location of USB hub on Vehicles without 4-zone Climate Control

Audio Jack

The audio socket is used for connecting an external audio source such as an MP3, cassette or CD player using a 3.5 mm jack plug. The audio socket (Aux In) without USB interface is standard equipment on the E70. It is located below the center armrest.
A 12 volt power socket is located in the immediate vicinity of the audio socket.

Service Information

Included with the option code 6FL (USB/Audio Interface) is a cable that is required to fully integrate an Apple iPod to the vehicle.

This cable allows the data files and incompatible audio files to be masked in the CID. Only compatible audio files will be displayed if this interface cable is used.